

**REMARKS**

Claims 1-17 are pending in the present application. Claims 1, 2 and 4 have been amended.

**Claim Rejections-35 U.S.C. 103**

Claims 1-3 and 5-17 have been rejected under 35 U.S.C. 103 as being unpatentable over the Okamoto reference (U.S. Patent No. 5,298,093) in view of SU 1148893 (abstract), and the Corwin reference (U.S. Patent No. 4,735,771) or WO 01/57280.

Applicants respectfully submit that this rejection is improper for at least the reasons as set forth in the Amendment dated January 13, 2010. This rejection is further respectfully traversed for the following additional reasons.

Claim 1 has been amended to include in combination the further feature that "Ba exists as atoms and as compounds in the steel". It should thus be understood that some of added Ba in the steel of claim 1 exists as atoms, and a remainder of the added Ba exists as compounds (such as Ba oxide, or their oxi-sulfide, although not limited thereto).

Also, claim 2 has been amended to include in combination the further feature that "MM exists as atoms and as compounds in the steel". In a somewhat similar manner as noted above, it should thus also be understood that some of added MM in the steel of claim 2 exists as atoms, and a remainder of the added MM exists as

compounds (such as MM oxide, or their oxi-sulfide, although not limited thereto).

The disclosure of the atomic state of Ba and the atomic state of MM may be found in the original specification on page 9, line 27 to page 10, line 7; page 15, lines 4-9; and page 16, lines 6-8. Also, the disclosure of the compound state of Ba and the compound state MM may be found in the original specification on page 10, line 8 through to page 11, line 3; page 15, lines 9-11; page 15, line 20 through to page 16, line 5; and page 16, lines 15-23.

Applicants respectfully submit that the prior art as relied upon merely discloses that Ba or REM (mainly La and/or Ce) serve to improve the hot workability of the steel **by fixing sulfur or oxygen**. Due to this reason, it is stated in the prior art as follows:

*"The lower limit of each of these elements is preferably equal to or higher than the arithmetic sum of the contents of impurities, S and O ( $[ \% S ] + 1/2 [ \% O ]$ )", (see column 8, lines 1-4 of the Okamoto reference);*

*"Tests show that addition of Ba makes possible the machining at reduced speeds, and produces better finish", (see the abstract of SU 1148893);*

*"These elements, as ions, enter into the protective oxide scale and modify predominantly anion and to a lesser extent cation transport through the oxide scale, greatly reducing the amount of oxidation observed due to elevated temperature exposure", (see the abstract of the Corwin reference); and*

*"A grain refining alloy having a composition FeXY wherein X is one of more element selected from the group consisting of Cr, Mn, Si, Ni and Mo and*

*where Y is one or more oxide and/or sulfide and/or nitride and/or carbide forming elements selected from the group consisting Ce, La, Nd, Pr, Ti, Al, Zr, Ca, Ba, Sr, Mg, C and N ... (omitted) ...", (see the abstract of WO 01/57280).*

That is, the characteristic of Ba or MM existing as atoms in the steel, i.e., filling atomic vacancies operating as a diffusion path for Cr, Mo, Si and W, is not disclosed in the prior art as relied upon.

Also, the characteristic of Ba or MM existing as compounds such as MM oxide and/or oxy-sulfide in the steel, i.e., blocking diffusion of Cr, Mo, Si and W, is not disclosed in the prior art as relied upon. The prior art relied upon does not disclose the role of an MM compound suppressing intermetallic compounds in the duplex stainless steel, because Ba or REM is added only for fixing sulfur and oxygen (or possibly N or C) in the primarily relied upon prior art.

In other words, in the prior art as relied upon, the Ba or MM compound is just an inevitable or unavoidable by-product of fixing sulfur and oxygen in the steel, whereas in claims 1 and/or 2 such Ba or MM compound together with Ba or MM existing as atoms are positively utilized in suppressing the intermetallic compounds in the steel.

Applicants respectfully submit that since the above discussed aspects are neither anticipated nor obvious from the prior art as relied upon, claims 1 and 2 would not have been obvious in view of the relied upon prior art, and that this rejection, insofar as it may pertain to claims 1-3 and 5-17, is improper for at least these reasons, in addition to the reasons as set forth in the Amendment dated January 13, 2010.

Claims 4-17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Okamoto reference. This rejection, insofar as it may pertain to the presently pending claims, is traversed for the following reasons.

Applicants respectfully submit that this rejection is improper for at least the reasons as set forth in the Amendment dated January 13, 2010. This rejection is further respectfully traversed for the following additional reasons.

Applicants respectfully submit that this rejection is improper for at least somewhat similar reasons as set forth above with respect to claim 2. That is, in the prior art as relied upon, the MM compound is just an inevitable or unavoidable by-product of fixing sulfur and oxygen in the steel, whereas in claim 4 such MM compound together with MM existing as atoms are positively utilized in suppressing the intermetallic compounds in the steel.

Applicants respectfully submit that since the above discussed aspects are neither anticipated nor obvious from the prior art as relied upon, claim 4 would not have been obvious in view of the relied upon prior art, and that this rejection, insofar as it may pertain to claims 4-17, is improper for at least these reasons, in addition to the reasons as set forth in the Amendment dated January 13, 2010.

#### Conclusion

The Examiner is respectfully requested to reconsider and withdraw the corresponding rejections, and to pass the claims of the present application to issue, for


at least the above reasons, in addition to the reasons as set forth in the Amendment dated January 13, 2010 .

In the event that there are any outstanding matters remaining in the present application, please contact Andrew J. Telesz, Jr. (Reg. No. 33,581) at (571) 283-0720 in the Washington, D.C. area, to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238.

Respectfully submitted,

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